



Senior High School Students' Awareness and Literacy on Computer Software Applications

Jorlan C. Indrinal

Abstract

The digital revolution has had a significant impact on daily life, as shown by the widespread use of devices and the seamless incorporation of technology into everyday activities. The purpose of this research paper is to find out the weak points of students in the awareness and usage of essential software applications as the fundamental inputs to the Program Enhancement for Senior High School (SHS) Technical-Vocational-Livelihood – Information Communication and Technology (TVL-ICT) students at Lopez National Comprehensive High School. The study utilized descriptive method of research conducted at Lopez, Quezon. A purposive sampling method was used in selecting the sample size constituting 36 student-respondents in different age and year levels. The study used Google forms and the survey was conducted via the internet due to the pandemic. The findings of the study showed that the Grade 11 and 12 students are aware of ICT fundamentals and different computer software applications. It was further revealed that there was significant difference in the computer software application awareness between grade 11 and grade 12 students. In order to improve students' knowledge and literacy in database applications, webpage design, and basic computer programming, an enhancement program may be applied to the specialization or integrated into other ICT subjects.

Keywords: TVL-ICT, LNCHS, Computer Awareness SHS, ICT Literacy

Received: July 19, 2021

Revised: September 30, 2021

Accepted: February 21, 2021

Suggested Citation: Indrinal, J.C. (2022). Level of Senior High School Students' Awareness on Computer Software Applications. *International Journal of Educational Management and Development Studies*, Volume 3 Issue 1, pp. 39 - 51.

About the author:

Grade 12 Student at Lopez National Comprehensive High School

** This paper is a finalist in the ILARI Research Competition (IRC) – 2021 Category 1 – High School*



© The author (s). Published by Institute of Industry and Academic Research Incorporated.

This is an open-access article published under the Creative Commons Attribution (CC BY 4.0) license, which grants anyone to reproduce, redistribute and transform, commercially or non-commercially, with proper attribution. Read full license details here: <https://creativecommons.org/licenses/by/4.0/>.

1. Introduction

The world has become increasingly reliant on technology. In fact, it changed the way people think about and value stuff, especially in the field of education. In this era of information technology, teachers, parents, and students are all becoming more aware of their importance in the search for knowledge. It makes the teacher's job easier while maintaining a positive attitude. The teachers are integrating their instruction through technology while the students have easy access on the internet to find information related to their studies. The age of information and communication technology (ICT) has begun that people without the knowledge will be left behind (Hwa, 2015).

In the Philippines, ICT is a watershed moment in the educational system. The rapid advancement of ICT paved the way for numerous opportunities in education, jobs, and personal lives. During the pandemic that the distance learning has been introduced, the teaching and learning mostly took place online. In this regard, both the teachers and students need to at least have a background on the proper use of technology in teaching and learning. While the ICT provides a wide range of possibilities for both teachers and students, it also necessitates development of skills (DICT, 2010).

Although people may benefit from ICT in a variety of ways, including data and analysis, it is still a pipe dream for many. For instance, the underprivileged school children in the Philippines have no access to computer and the internet. The introduction of module approach to teaching and learning in the public school system benefits the students with no access to technology (Vidal, 2017). While majority of the students use their mobile phones in online learning, there are students with no access to technology at all.

Developing and maintaining technical skills and competencies is seen as a critical part of a student's ability to engage with twenty-first century education by governments all over the world. In Quezon Province, public schools lack full ICT facilities while the majority of teachers are not ICT literate, making it difficult for students to learn (Gacia-Ordaz, 2015). As a consequence, student and school performance suffers. With the implementation of the online learning in various schools in the country, it is a fundamental requirement to have the basic knowledge and skills in ICT. It is imperative to assess the students' knowledge on ICT prior to the implementation of the online learning modality. Thus, this study aims to determine the level

of awareness of the SHS TVL - ICT students in computer software applications and internet literacy. The study also proves the following hypothesis at 0.05 level of significance:

Ho: There is no significant difference between the levels of computer software application awareness when their demographic profile is taken as factor.

2. Literature Review

Students' Knowledge and Skills in ICT

Most, if not all, tasks necessitate the use of ICT. The education sector is not immune to this, as information and communication technology (ICT) has enhanced teaching and learning methods and made them less difficult. ICT-assisted teaching and learning has expanded beyond the four walls of a classroom to include learning from the comfort of one's own home. This technological innovation has similarly bridged the digital gap between information-rich and information-poor societies.

In the age of e-learning, any educational institution that does not accept the evolution of ICT for teaching and learning would find it difficult to function and compete favorably with their peers. In this age, digital competence is a promising skill to master. However, teaching such a skill is not easy, particularly when the students are not familiar with computers. Senjaya et al. (2018) found in the study that Indonesian high school students were mostly aware of the presence of ICT and regularly engage with ICT devices or services. They also know how to use at least one ICT application or skill. Since high school students have a high level of ICT knowledge, digital competence can be easily taught to them.

ICT encompasses more than simply computers. Numerous IT enthusiasts have defined ICT as a collection of hardware (equipment), software (operating systems, applications, etc.), and communication facilities (Local Area Networks, wide area and backbone networks, communication protocols, etc.). Wang and Woo (2007) defined ICT as a tool that can be hardware (such as computers, digital cameras), software (such as excel, discussion forums), or a combination of the two. More crucially, ICT in the educational setting primarily refers to a variety of resources and technologies that aid in boosting student learning and, hence, in accomplishing learning objectives (Altun et al., 2011).

In the current educational setting, ICT is viewed as a viable instrument for providing educational possibilities in both official and informal settings. ICTs can boost learners'

motivation and involvement during the teaching-learning process. It instills in students a sense of digital literacy, inventiveness, higher-order thinking and good reasoning, as well as effective communication and high productivity (Tinio, 2002). As a result, ICT is viewed as a potent tool in the landscape of education. According to Warschauer (2014), the simultaneous effects of globalization and technological advancement have altered the way teaching and learning is delivered in different subject areas. Thus, ICT have developed into critical literacy skills (Jung 2016).

The ICT proficiency of the teachers is the fundamental area in the effective use of ICT in the teaching and learning. In the study of Esfijani and Zamani (2020), it was revealed that the ICT integration at secondary schools was highly related to the teachers with adequate access to hardware at home and school. It was further revealed that secondary teachers were not proficient in using ICT tools and their technology usage in education, research and communication domains is less than the desired level although they have attended ICT training courses. Similarly, Khalid (2017) found in a study conducted in Malaysia that 77% of teacher respondents were not integrating computing into their classroom instruction due to lack of training and time constraints. This was explained by Singhavi & Basargekar (2020) that proficiency of teachers related to using ICT is affected by school culture, school leadership, access to ICT resources, availability of digital content as well as support received from colleagues and the administration.

With respect to the students' ICT proficiency and its effect on the academic performance, Xiao et al. (2019) determined the effects of the student-level ICT impact factors (the availability of ICT, the use of ICT and attitudes toward ICT) to the reading proficiency of 37,155 15-year-olds from five representative countries with extremely high reading proficiency. It was revealed that ICT-related attitudinal factors (interest in ICT and perceived autonomy in using ICT) were highly correlated to high reading proficiency. Similarly, Basri et al. (2018) found in a study that there exists a relationship between ICT adoption and academic performance in a conservative environment which resulted to the improvement of the performance of female students. However, Banji et al. (2020) identified that the commonest challenges of using ICT tools for learning were lack of opportunity provided by teachers for students to use the tools on their own, inadequate ICT tools and difficulty teaching ICT practical lessons without demonstration. To this, Tanveer (2011) assert that it is critical that both teachers and students develop confidence in using technology through appropriate facilitation using the necessary electronic equipment, training, and time resources.

Computer Software Applications

The digital revolution has dramatically altered daily living, evidenced in the ubiquity of mobile devices and the smooth integration of technology into common chores such as shopping, reading, and finding directions (Anderson, 2016; Smith & Anderson, 2016; Zickuhr & Raine, 2014). The usage of computers, mobile devices, and the Internet is at its highest level to date and projected to continue to expand as technology becomes more accessible, particularly for people in developing nations (Poushter, 2016). In addition, there is an increasing number of people who are smartphone dependent, relying entirely on smartphones for Internet access (Anderson & Horrigan, 2016) rather than more expensive devices such as laptops and tablets.

Computer-based technology (hence referred to as technology) necessitates the use of specialized hardware, software, and micro processing capabilities found on a computer or mobile device. Additionally, student engagement has garnered considerable attention over the last several decades as a result of a shift toward student-centered, constructivist instructional methods (Haggis, 2009; Wright, 2011), mounting pressure to improve teaching and learning outcomes (Axelson & Flick, 2011; Kuh, 2009), and promising studies demonstrating a link between student engagement and positive academic outcomes (Carini, Kuh, & Klein, 2006; Center for Postsecondary Research, 2016; Hu & McCormick, 2012).

3. Methodology

This study used descriptive type of research through survey strategy. The population of the study were the students of Lopez National Comprehensive High School. A purposive sampling method was used in selecting the sample size constituting of thirty-six (36) respondents in different age and year levels. The primary eligibility for the respondent is access to technology, belongs to Grade 11 and 12, and is taking/taken ICT class. The majority of the respondents are 17 – 18 years old (94%), male (75%) and in Grade 12 (72%).

The primary data gathering instrument used in the study is the researcher-made survey questionnaire. This survey tool is composed of two parts: demographic profile of the respondents and computer software application awareness which includes indicators related to the access to computer, software applications used, ICT awareness, and ICT literacy. The instrument was content-validated by the ICT coordinator of the school, the research adviser, and the school

research coordinator for students researches. The statements were rated using 5-point Likert scale.

The survey was conducted online due to the current restrictions implemented by the government. During the planning stage, a Gantt chart was created in order to manage and maximize the time. The questionnaire was developed through Google Form. The actual survey was conducted during the last week of December 2020 through online. The student-respondents gave their consent to answer the survey. The Google form was sent to the respondents' social media accounts such as Facebook and Instagram.

The data were analyzed using a parametric test of difference called T-test.

4. Findings and Discussions

Table 1

Students' Access to Computer

Access	Frequency	Percentage	Rank
Home	15	42%	4
Internet Café	17	47%	3
School	36	100%	1
Friends/Relatives	19	53%	2

* multiple responses

Table 1 presents the students' access to computer. It is highly noticeable that the students' main access to computer is only through the school (100%). Although there are students with personal computers at home (42%), there are still students without computer access at home. If computer access is necessary, students find access through internet café (47%) and friends/relatives (53%). The results support the claim of Rosdy (2015) that schools are the main source of ICT competencies which entailed great effects to students.

Table 2

Ranking of Software Applications Used

Access	Rank 1	Rank 2	Rank 3
MS Office Package	36 (100%)		
Desktop Publishing Software		34 (94%)	2 (6%)
Web Designing		2 (6%)	33 (92%)
Computer Programming Languages			1 (2%)

The respondents were asked to rank the top 3 software applications they commonly used within the last three months. The results in Table 2 clearly shows that students mostly use the MS Office Package with 100% response in Rank 1. This is mainly because the course works and other requirements for the different subjects are normally prepared using MS Word and MS Excel, among other applications. At rank 2 is Desktop Publishing Software as chosen by 94% of the students while Web Designing at rank 3 with 92%.

The results indicate majority of the students used MS Office Package, Desktop Publishing Software and Web Designing within the last three months. The results clearly explained the findings of Correos (2014) that secondary school students commonly used applications in their respective schools during the time of study.

Table 3

Students' ICT Awareness

Indicator	Grade 11		Grade 12	
	WM	Description	WM	Description
Knowledge about the fundamentals of computers (i.e. Hardware and software computer systems, Computer generations etc.).	4.64	Extremely Aware	3.01	Moderately Aware
Knowledge about the fundamentals of Internet (i.e. What is Internet, what are the services offered by the Internet? etc.).	4.00	Very Aware	4.11	Very Aware
Knowledge related to computer concepts such as social, ethical and legal issues.	3.52	Very Aware	2.67	Moderately Aware
Knowledge about at least three ways that computers are used in society.	3.64	Very Aware	4.11	Very Aware
Knowledge about at least three occupations related to computer usage.	5.00	Extremely Aware	4.67	Extremely Aware

Table 3 shows the assessment of the Grade 11 and 12 students' ICT awareness. It is seen that the knowledge relating to the occupations in computer usage had the highest WM value of 5.00 with extremely aware description for grade 11 while grade 12 students also received an extremely aware rating of 4.67 in the same indicator. The lowest for grade 12 is the knowledge related to computer concepts such as social, ethical and legal issues with 2.67 which is the same lowest assessment of the grade 11 with 3.52 WM. Overall, the results show high ICT awareness of both the grade 11 and 12 students. However, the grade 11 students rated themselves more aware on ICT concepts and knowledge than the grade 12 students.

The results of the study relate to the findings of Valdez (2010) that there is a difference between the levels of awareness of students per year level. Similarly, Senjaya et al. (2018) found that high school students were mostly aware of the presence of ICT and regularly engage with ICT devices or services. Since majority of the classes are online, the classes require students' use of technology.

Table 4

Students' ICT Literacy

Indicator	Grade 11		Grade 12	
	WM	Description	WM	Description
Skills in basic hardware and basic operating system functions – Identifying computer parts, powering up and powering down the computer, open/save files, recognize different file types	4.11	Excellent	4.53	Excellent
Skills in basic hardware and basic operating system functions – Identifying computer parts, powering up and powering down the computer, open/save files, recognize different file types	3.28	Fair	4.28	Good
Skills in word processing – Create/save/print documents, Insert tables/charts/ labels/symbols, Format page layout (margins, page numbers, page borders)	3.67	Excellent	4.75	Excellent
Skills in presentation graphics – Create/save/print slide shows, Insert new slide/layout/tables/charts, Create animations	3.01	Fair	3.78	Good
Skills in databases – Design basic databases with queries and reports/forms	2.11	Poor	2.86	Fair
Skills in Internet & e-mail – Surfing the Internet and sending e-mail messages.	4.01	Excellent	4.33	Excellent

Table 4 shows the ICT literacy of Grade 11 and Grade 12 students. For grade 11 students, the highest rated literacy is on the skills in basic hardware and basic operating system functions with 4.11 WM. This skill includes identifying computer parts, powering up and powering down the computer, open/save files, recognize different file types. Meanwhile, the grade 12 students are excellent on the skills in word processing with 4.75 WM. This skill includes create/save/print documents, insert tables/charts/ labels/symbols, format page layout (margins, page numbers, page borders). On the other hand, the lowest rated skill for grade 11 and grade 12 students is on the skills database with poor and fair rating of 2.11 and 2.86, respectively. This skill pertains to the design of basic databases with queries and reports/forms.

The overall results showed that grade 11 and 12 students are ICT literate. Their knowledge on the ICT concepts and elements depend on the particular software or tool they usually use and apply in their studies. Similar to the findings of Senjaya et al. (2018) that students know how to use at least one ICT application or skill. As explained by Wang and Woo (2007), students use hardware, software or a combination of the two. Accordingly, as explained by Altun et al. (2011), they use whatever boosts student learning in accomplishing learning objectives.

Table 5

Significant Difference Between Software Awareness and Literacy of Grade 11 and 12 Students

Variables	Year Level	Mean	SD	T Value	Sig Value	Decision	Interpretation
Computer Awareness	11	3.14	0.33	.876	0.04	Rejected	Significant
	12	4.16	0.49				
Computer Literacy	11	3.37	0.76	1.423	0.03	Rejected	Significant
	12	4.08	0.63				
Overall				.954	0.04	Rejected	Significant

Table 5 shows the test of significant difference between the software awareness and literacy of the Grade 11 and Grade 12 students. Using 0.05 as alpha, the sig value is all lower than the alpha, so the null hypothesis is denied. With a sig value of 0.04 on computer awareness, the results proved significant difference in the computer awareness of the grade 11 and 12 students. Similarly, the sig value of 0.03 on computer literacy also rejects the null hypothesis and affirms a statistical significant difference on the literacy of the students.

As Grade 12 students are more experienced in the ICT field than Grade 11 students, based on the results of the study, Grade 12 students are more aware and ICT literate than grade 11 students. This affirmed the study of Griswold (2003) that software awareness between grade levels vary because of the characteristics related to their awareness and social implications. Moreover, the study of Howell et al. (2017) proved the same findings that ICT skills were positively related to some demographics factors.

5. Conclusions

This study used descriptive research through survey strategy to assess the ICT awareness and literacy of the 36 purposively chosen grade 11 and 12 students of Lopez National

Comprehensive High School. The results of the online survey conducted through Google Form on December 2020 were analyzed using a parametric test of difference called t-test. The results of the study showed that grade 11 and 12 students have high ICT awareness and literacy. They have complete computer access at the school with MS Office as the primary software being used. The results further revealed a significant difference in the ICT awareness and literacy of the grade 11 and 12 students. The results suggest substantial differences in attitudes and use habits of the students. Accordingly, male students tend to enroll in ICT courses over female students because of the strand's technical specifications. Similarly, the maturity and time of study of the grade 12 students affected their proficiency in computer applications than grade 11 students. With a significant difference in the computer software applications awareness between grade 11 and grade 12 students the hypothesis is rejected.

Based from the findings, grade 11 students could need more exposure to the poor areas of computer applications such as database management and webpage designing applications. To improve students' knowledge and literacy in database applications, webpage design, and basic computer programming, an enhancement program may be applied to the specialization or integrated into other ICT subjects like empowerment technologies and media and information literacy.

References

- Altun, S. A., Kalayci, E., Avci, U. (2011). integrating ICT at the secondary level: A case study. *Turkish Online Journal of Educational Technology - TOJET*, 10(4), p230-240.
- Anderson, M., & Horrigan, J. B. (2016). *Smartphones help those without broadband get online, but don't necessary bridge the digital divide*. Washington, D.C.: Pew Research Center Retrieved from <http://www.pewresearch.org/fact-tank/2016/10/03/smartphones-help-those-without-broadband-get-online-but-dont-necessarily-bridge-the-digital-divide/>.
- Anderson, M. (2016). *More Americans using smartphones for getting directions, streaming TV*. Washington, D.C.: Pew Research Center Retrieved from <http://www.pewresearch.org/fact-tank/2016/01/29/us-smartphone-use/>.
- Axelsson, R. D., & Flick, A. (2011). Defining student engagement. *Change: The magazine of higher learning*, 43(1), 38–43.

- Banji, G. T., Okyere, S., Kornu, B., & Migbordzi, P. (2020). Challenges Junior High School Pupils Face in the Use of Information and Communication Technology (ICT) Tools for Learning in Ghana. *Asian Journal of Education and Social Studies*, 11(3), 37-45. <https://doi.org/10.9734/ajess/2020/v11i330294>
- Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education*, 47(1), 1–32. doi:10.1007/s11162-005-8150-9.
- Center for Postsecondary Research (2016). Engagement insights: Survey findings on the quality of undergraduate education. Retrieved from http://nsse.indiana.edu/NSSE_2016_Results/pdf/NSSE_2016_Annual_Results.pdf.
- Correos, C. (2014). ‘Teachers’ ICT literacy and utilization in English Language Teaching, ICT & Innovations in Education’, *International Electronic Journal*, vol. 2, no. 1, pp. 1-25.
- DICT (2010). Philippine Digital Strategy Framework.
- Esfijani, A., & Zamani, B. E. (2020). Factors influencing teachers’ utilisation of ICT: the role of in-service training courses and access. *Research in Learning Technology*, 28. <https://doi.org/10.25304/rlt.v28.2313>
- Gacia-Ordaz, Juan Carlos (2015). The Importance of ICT in student’s competence: the Case of the Faculty of Business Studies and Tourism of the University of Huelva. University of Huelva.
- Haggis, T. (2009). What have we been thinking of? A critical overview of 40 years of student learning research in higher education. *Studies in Higher Education*, 34(4), 377–390. doi:10.1080/03075070902771903.
- Hu, S., & McCormick, A. C. (2012). An engagement-based student typology and its relationship to college outcomes. *Research in Higher Education*, 53, 738–754. doi:10.1007/s11162-012-9254-7.
- Hwa, JT (2015). Skills requirements for ICTs in Learning. Stage models of ICT adoption in small firms. *Impact of E-Commerce on Consumers and Small Firms*, 19–36.
- Jung, Park (2016). Introducing Everyday ‘Digital Literacy Practices’ into the Classroom: an Analysis of Multi-layered Media, Modes and their Affordances. *Journal of New Approaches in Educational Research*, 7(2):131–139.

- Khalid, D.Z. (2017). An Analytical Study of the Role of ICT in Higher. *Education. Journal of Global Economy*, 15(1):56–61.
- Kuh, G. D. (2009). The National Survey of Student Engagement: Conceptual and empirical foundations. *New Directions for Institutional Research*, 141, 5–20.
- Poushter, J. (2016). Smartphone ownership and internet usage continues to climb in emerging economies. Washington, D.C.: Pew Research Center Retrieved from <http://www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/>.
- Senjaya, CJ et al. (2018). Analysis of the use of social media in Higher Education Institutions (HEIs) using the Technology Acceptance Model. *International Journal of Educational Technology in Higher Education*
- Singhavi C., Basargekar P. (2020) Implementing ICT at School Level: Factors Affecting Teachers' Perceived Proficiency. In: Sharma S.K., Dwivedi Y.K., Metri B., Rana N.P. (eds) Re-imagining Diffusion and Adoption of Information Technology and Systems: A Continuing Conversation. TDIT 2020. *IFIP Advances in Information and Communication Technology*, vol 618. Springer, Cham. https://doi.org/10.1007/978-3-030-64861-9_56
- Smith, A., & Anderson, M. (2016). *Online Shopping and E-Commerce*. Washington, D.C.: Pew Research Center Retrieved from <http://www.pewinternet.org/2016/12/19/online-shopping-and-e-commerce/>
- Tanveer, Gordillo (2011). Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure. *Computers in Human Behavior*
- Vidal, P (2017). Social networks as tools to enrich learning environments in higher education. *Bordón. Revista de pedagogía*.
- Wael Sh. Basri, Jehan A. Alandejani, Feras M. Almadani (2018). "ICT Adoption Impact on Students' Academic Performance: Evidence from Saudi Universities", *Education Research International*, vol. 2018, Article ID 1240197, 9 pages, 2018. <https://doi.org/10.1155/2018/1240197>

- Wang and Woo (2007) Systematic Planning for ICT Integration in Topic Learning. *Educational Technology & Society*, 10 (1), 148-156.
- Wright, G. B. (2011). Student-centered learning in higher education. *International Journal of Teaching and Learning in Higher Education*, 23(3), 92–97.
- Xiao, Y., Liu, Y. and Hu, J. (2019). Regression Analysis of ICT Impact Factors on Early Adolescents' Reading Proficiency in Five High-Performing Countries. *Front. Psychol.*, <https://doi.org/10.3389/fpsyg.2019.01646>
- Zickuhr, K., & Raine, L. (2014). E-reading rises as device ownership jumps. Washington, D.C.: Pew Research Center Retrieved from <http://www.pewinternet.org/2014/01/16/e-reading-rises-as-device-ownership-jumps/>.